



BLOOD BANK SYSTEM BASED ON DYNAMIC LOCATION UPDATION

¹Ankit Kumar Saini, ²Avneesh Yadav, ³Harshit Garg, ⁴Utsav Chhaparia

¹Assistant Professor,

^{1,2,3,4}Department of Computer Science and Engineering,

Meerut Institute of Engineering and Technology, Meerut, U.P. India

ABSTRACT

This Paper discuss about the benefits of Blood Donation and its Management which is a major concern for all the health workers and blood recipients and thus this project helps in improving communication between the blood donors and people in need of blood ultimately providing an extra hand to all the health care workers and removing communication gap. The blood management system offers functionalities to quickly access the donor and blood recipients records collected from various parts of the country and to monitor the performance and blood donation activities such as a minimum three months gap to be maintained after the donation of blood and also if there is change in location of any of the user i.e. the donor or receiver shifts to new place then the location of the new place will be updated in the database automatically. It is a Web-based Application through which Registered Hospitals and Recipients can check the availability of required Blood and can send Requests for blood to the nearest blood bank or the donor with the same blood type and can be ordered online as and when required. In this, Blood Banks can also send the request to donors and other banks for blood. It is also having a communication system for donor and receiver.

KEYWORDS: *Dynamic Location Updation, Blood Management, Geo plug-in API, IP Address*

1. INTRODUCTION

With the increase in population at such rapid speed, there is also an increase of many new diseases and evolution of the old one. With the new and old diseases, there are several other factors which cause loss of life. In the case of a patient being severe or not so severe, in both cases, there might be a need for blood that matches the blood of the patient. Unfortunately, there have been cases in which a man lost his life due to not getting blood in time. An increase in population has indeed increased the number of blood-donors but their percentage hardly reaches 10% of the total population and the one in need of that blood stays at large. The medical advancement has increased the demand for blood for the patients and also for several other testing. Due to lack of proper communication between the two bodies namely the donors and the institution needing blood and mismanagement of the data of the blood causes many losses of life. These problems can be overcome by the proper introduction of an automated and synchronized database which is accessible to the donors and the receivers. A system needs to be developed that works on the high end, efficient, and highly available and easily accessible by the user. The management of its database needs to be up to date and hence we are having dynamic location updation method where if a user changes its geographical location to any part of the world then he will be send a notification stating that would he like to change its location on the database and if user clicks any of the option then the database will be updated accordingly. The updation in location from the database is utmost important for maintaining the legitimacy of the whole service and also the purpose of the web service is to help people save lives by receiving blood needed and also for the institutes like blood banks and hospitals providing blood to the patients to keep a record of the available blood and its type. This web service is based on the technology of cloud computing and database management systems. This



will not only save lives but also bridge the gap between the one in need of blood and the one providing it to the needed because of the clarity to the patient and his or her people as in where to go and approach for proper blood type in less amount of time. This will reduce the efforts on both sides. The main objective other than creating ease for the patient is to create an easy way for the hospitals and the blood banks to enter the details about blood groups, and its quantity available for the use and also the details of the patient and donors and keeping a track of this database. The existing system has many flaws to it namely it is time-consuming, not has dynamic updation of data facility, it leads to error-prone results, consumes a lot of human effort to keep a proper track and people working in the medical field do not have much time and effort to spare. Other faults residing in the current system is the lack of security of data and once lost it is not easily restored and takes a lot of time, accuracy and success rate of this system is unexpectedly very low. The final reports about the transaction also take a lot of time. These faults seem not to be much but can cost lives sometimes as the one treating the needed and the one in need might be taking the most precious thing of all "time". The system proposed not only makes access to data easy but also saves a lot of time and effort which in the medical field is of most priority. It would spare nurses and would provide more manpower to a medical expert who otherwise was busy working filling in details about the blood transaction on a not so efficient system.

2. METHODOLOGY

2.1 PROPOSED SYSTEM

The proposed system (Blood Bank System based on Dynamic Location Updation) is designed to help the Blood Bank administrator to meet the demand of Blood by requesting information and notifying the receiver, the registered institution providing and safekeeping the blood and the donor about the availability of blood accordingly. This system gives the organized strategy of how to fill the gap between Donor, Recipient and Blood Banks.

When User interacts with the application, He/she will have either the option to login as an admin or as a donor or acceptor. Then he will select as an option either to go as a donor or acceptor.

As a blood receptor he has to provide information like name, mobile, aadhar no, email, blood group required. As a donor, he is required to provide information like name, mobile, aadhar no, email, gender, blood group and address.

As ADMIN his information is already stored in the database & he is required to provide the correct username and password. Only then he will be able to modify any changes in the application like he can manage blood units stock, he can also edit, delete and take care of the donor's and recipient's list and can also monitor the previous users who have either donated the blood or have received the blood.

This system substantiates minimum paperwork and also assists blood recipients, banks and donors. Using our application, the user can directly check from our application about the blood availability and hence reduces the effort of going to the blood bank.

This Application will provide a common ground for the both (i.e., Recipient, Donor) and will ensure easy and fast fulfillment of the demand for Blood requested by Recipient.

It also ensures that there should be at least 3 months gap period between the donors who are willing to donate the blood, based on the previous date they have donated the blood so there are no health complications for the donor.

The unique feature which we have implemented in this is dynamic location updation which ensures legitimacy of the database and will help the system and recipient to provide the list of the donors at new location automatically.

The proposed system consists of the subsequent goals and has the scope as follows:

- a. Goals:
 - To ease the process of blood transmission.
 - To cultivate the commenced system.
 - To upgrade into a scalable system.

In this project, there are 2 models.

1. Donors
2. Acceptors

Donors/Acceptors They are required to fill their respective credentials and should respond to the call when needed.



One more task provided to Donors/Acceptors is that during the instance they shift to new place then they have to respond to the notification of giving the location access from the device to the service so the new location can easily be fetched and updated in the database automatically.

Module 1: Web Application

This module consists of all the processes of how the blood transmission process takes place. This web application consists of several web pages for a donor/recipient to get himself registered/updated and also to request/donate the blood as and when required and there are some additional features with the administrator of the web application such as to approve the blood request and also will be able to fetch the past completed records and will be able to manage/update the stock information as received from the institutions.

2.2 System Analysis

Our Blood Bank System extensively uses one of the most widely used technologies PHP. Whenever the client clicks on any of the buttons, a Session Request is created which, using the web container, passes to the application console. The console consists of many PHP Pages which are run using the XAMPP server. That PHP code checks for the changes in the Database (if any) and matches it from the latest modified database.

When a user visits the application, it has to select himself as a donor or a receptor. In either condition, he has to fill his credentials. That data is stored in the database tables (donor table and receptor table) which are also referenced to the PHP Pages like donate.php, signin.php, search.php, donor.php, etc....

When the user visits our application, if his data is stored previously on the portal then user is navigated to the usernav.php where he/she can make modifications in his information. If his identity is not stored on the portal then he will be redirected to the navigation.php where his/her profile option will be hidden and only limited access will be granted.

Coming to the Administrator Console, whenever a user tries to log in as an Admin, he has to fill in his assigned username and authorized password. His credentials are verified from the admin table from the database and if matches, only then the user is granted permission to manipulate the system otherwise an error message is displayed indicating that the entered username and password do not match with the one already stored in the system.

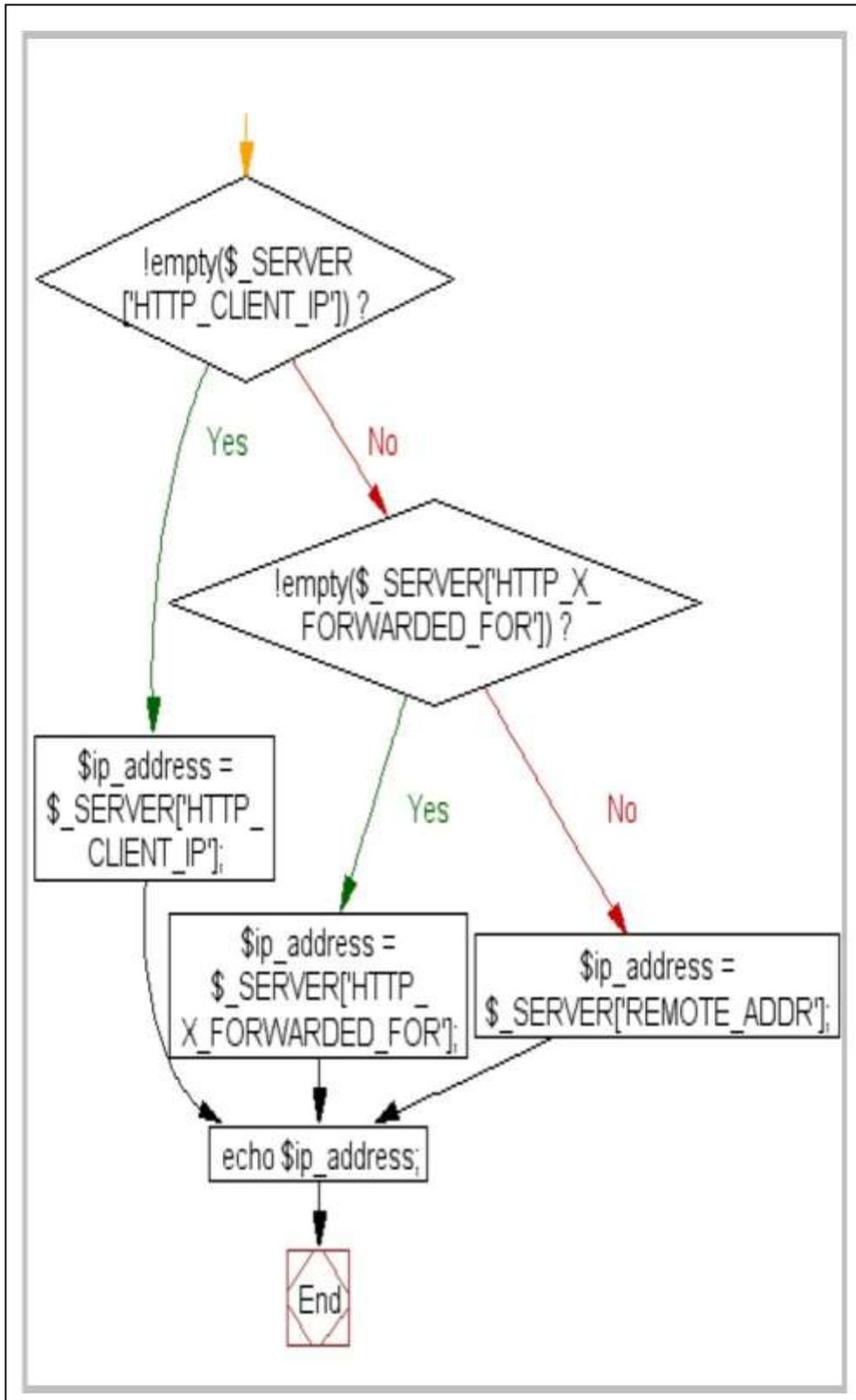
Now Admin can also make new entries to the admin table in the database to add new people as system administrators. He/she can also manage the Blood Stock by incrementing or decrementing the amount of blood quantity available currently.

He can also add a new Donor or Receptor by clicking on the add New Donor/Receptor Button and can enter the details of the donor/Receptor manually if he wants. That data will get stored in the donor/acceptor table. He can also bring changes to data entered from the user interface only and not consult the database.

One of the most important functions that an admin performs is that he keeps a track record of the donors and receptors that get their job done. The admin prohibits those donors in the request completed section and when any old donor tries to make a data entry again then a check from the previously stored data is performed and allowed only and only if there is a 90 days gap between the blood donations. Thus, the system in a way also maintains the health record of the donors.

Furthermore, the location of the donors will be tracked dynamically and will get updated in the database. This will take place using the Geo-Plug-in Restful APIs that will fetch the IP Address of the client and using that the City and Location will get updated and changed accordingly. Now according to the new updated Location, user will have clients accordingly.

3. Fetching client's IP Address dynamically





3.1 Proposed Algorithm

The following algorithm codes are proposed for different purposes:

Algorithm 1: IP address Algorithm

Result

Variable ip_address = IP address of the client

```
//whether IP is from share internet
```

```
If (server ['HTTP_CLIENT_IP'] is not empty)
```

```
    | ip_address = server ['HTTP_CLIENT_IP'];  
end
```

```
//whether IP is from proxy
```

```
else if (SERVER ['HTTP_X_FORWARDED_FOR'] is not empty)
```

```
    | ip_address = SERVER ['HTTP_X_FORWARDED_FOR'];  
end
```

```
//whether IP is from remote address
```

```
else
```

```
    | ip_address = SERVER ['REMOTE_ADDR'];  
end
```

```
return ip_address;
```

The IP address fetched from the above algorithm will be used to determine the latitude and longitude of the user which will be further used to determine the location of the user using Rapid API IP Geo Location which is a very trusted, verified and professionally used API.

Algorithm 2: Location Detection Algorithm

Result: Database gets updated with the new Location of the User

User initial location value;

while User location does not changes

```
    | do wait;  
end
```

if Location changes then

```
    | Function Fetch_new_location ();  
    |   | if (old_dynamic_ip is not equal to new_dynamic_ip)  
    |   |   | update the database with new location;  
    |   |   | end  
    |   | end  
end
```

If it this algorithm returns new location same as the initial one then nothing will occur otherwise after it is ascertained that the user's location has been changed then the server will update the location of the user from the database.

4. Output Screens

The various screenshots of various activities from the application are shown below:



Figure 1: Home Page



This is the home page of the blood bank where if the user comes for the first time then he will be asked to signup and on the homepage if user wants to search for a particular type blood group based on a particular city he can do so.

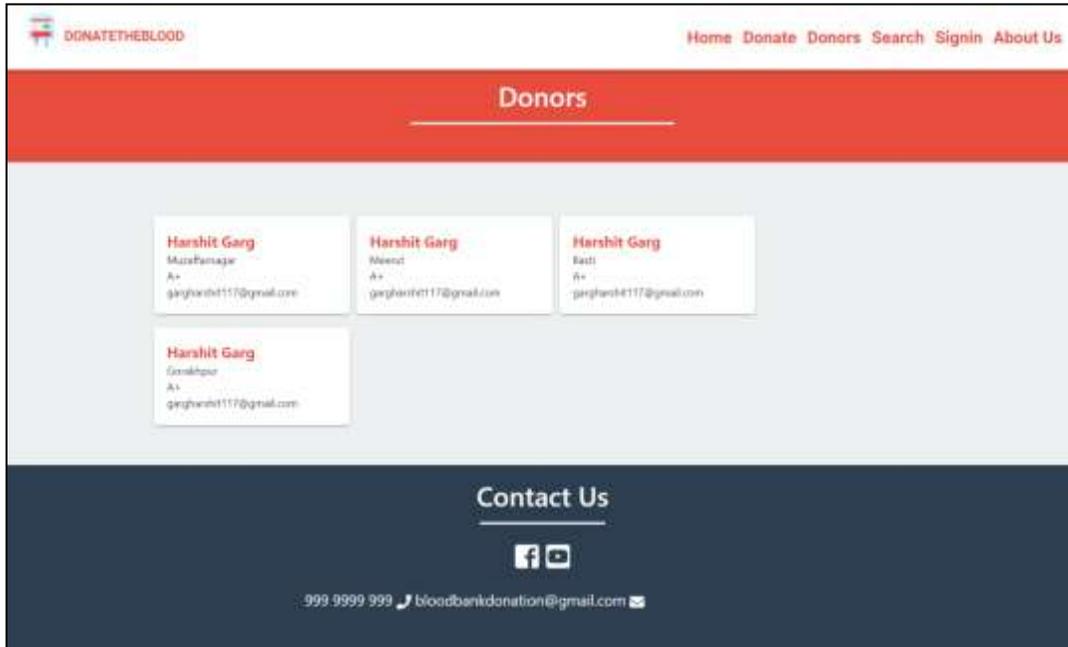


Figure 2: Donors list

This is the web page showing you all the list of the donors registered on the website and will also show you the list of the donors as requested from the search option on the homepage.

name	blood_group	gender	email	city	dob	contact_no	save_life_date	password
Harshit Garg	A+	Male	gargharshit117@gmail.com	Muzaffarnagar	07-12-1980	1236547890	0	e807f1fc82d132f9bb018ca6738a19f
Harshit Garg	A+	Male	gargharshit117@gmail.com	Meerut	07-12-1980	1236547890	0	e807f1fc82d132f9bb018ca6738a19f
Harshit Garg	A+	Male	gargharshit117@gmail.com	Basti	07-12-1980	1236547890	0	e807f1fc82d132f9bb018ca6738a19f
Harshit Garg	A+	Male	gargharshit117@gmail.com	Gorakhpur	07-12-1980	1236547890	0	e807f1fc82d132f9bb018ca6738a19f

Figure 3: Database View of Donors List

This is the merged list of single data stored in the database formed by changing the IP addresses resulted in the dynamic updation the database i.e. location (city) got changed at every updation.

5. CONCLUSION

Daily new technologies are being introduced in the world and this is making our lives better by reducing the extra efforts that we have to put in and hence also reducing the time of work done. The Blood Bank Management System based on dynamic location updation proposed by us also reduces the time and effort for the acceptors and donors and constructs communication synchronization between them. This web application provides a way to contact the donors in case of emergency without having any distrust on the location of the donor. Blood recipients can put their requests for blood so that they can be contacted by the user. The database is a key component of this system as it is required to be checked continuously for the smooth working of the system.



This project has given us all an opulent opportunity to design, implement and test the application. This was helped in putting into practice various concepts of Software Engineering and Database Management Systems like maintaining the consistency, integrity and durability of the database.

Although we have put our best efforts to make this system as flexible, efficient and simple, exceptions and limitations are something inevitable. The main limitation of this application is internet connectivity and location permission given by user that cannot be ruled out. So there are some chances of getting data delivery late but once the internet connectivity is successfully established and the location permission is given, it will add on the speed.

The enhancement is always possible in every model. In future versions, its Encryption standards can be raised a level higher to make the system more secure.

Also, this system can be extended by collecting more and more data not only in cities but also in rural areas and will provide much more services for the welfare of humanity.

6. REFERENCES

1. "Blood-Bank_Details", <https://www.scribd.com/document/342098928/Synopsis-ofBlood-Bank-Management-System>
2. "Research-Paper" <http://www.researchinventy.com/papers/v1i12/B0112005007.pdf>
3. "Research-Paper", <https://www.scribd.com/document/419367904/Blood-Bank-Management-System-Ijariie6874>
4. "Research-Paper", <https://www.scribd.com/document/419886668/Blood-Bank-Management-System-pdf>
5. Aware Sachin B, Arshad Rashid, Ansari aadil, Bombale R.R., "Web Based Blood Donation System".
6. Location Sensing API < <https://openweathermap.org/api> >